

**What is claimed is:**

1. A method for protecting a data service in a Metropolitan Area Transport Network, comprising:

establishing a work path for transporting a service between a source node and a work destination node of the service in the Metropolitan Area Transport Network;

setting a node other than the work destination node as a protection destination node;

establishing a protection path between the source node and the protection destination node for protecting the service in the work path;

the source node detecting a failure state of links of the work path and the protection path and a failure state of a node in the links of the work path and the protection path;

the work destination node and the protection destination node detecting respectively the failure of the links connecting themselves to a data device, if there is the failure, notifying the source node; and

switching the data service in the work path to the protection path by the source node when the failure state of the link of the work path or the failure state of a node in the link is detected or a failure state notice of the work destination node is received.

2. The method according to Claim 1, wherein, the step of switching comprises:

one protection path providing a protection for multiple work paths; and

the work path with the highest priority being switched to the protection path when the multiple work paths are out of work at the same time.

3. The method according to Claim 1, further comprising:

when the work path runs well, the source node transporting extra data services via the protection path, and when the work path is switched to the protection path, stopping the extra data services.

4. The method according to Claim 1, further comprising:

when the source node detects that the failure of the work path has been eliminated or the source node receives a notice that the failure of the work path has been eliminated, switching the services from the protection path to the work path.

5. The method according to Claim 1, further comprising:  
after the source node switches the work path to the protection path, the source node setting the protection path as the current work path, and setting the work path before the switching as the protection path.
6. The method according to any of Claim 1 to Claim 5, wherein the work destination node and the protection destination node are connected to the same data device.
7. The method according to any of Claim 1 to Claim 5, wherein the work destination node and the protection destination node are connected to different data devices which are connected with each other.
8. The method according to Claim 6 or Claim 7, wherein, the step of notifying the source node comprises:  
the work destination node and the protection destination node notifying the source node by means of signaling after detecting a failure state of the link; and  
further comprising:  
the work destination node and the protection destination node notifying the source node by means of signaling after detecting a recovery from a failure state.
9. The method according to Claim 8, wherein, the work destination node and the protection destination node adopt a confirmation mechanism when notifying the source node by means of signaling, and keep on sending the failure state information to the source node until receiving the confirmation information from the source node.
10. The method according to Claim 8, wherein the signaling comprises: Ethernet Operation Administrative and Maintenance (OAM) signaling and Multiprotocol Label Switching (MPLS) OAM signaling.